

We claim:

1. An aqueous-based cross-linkable binder composition comprising
 - (A) an aqueous dispersion of an aldehyde-functional polyurethane having a number average molecular weight of more than 1,000 and an average aldehyde functionality of ≥ 2 , which polyurethane comprises ionic and/or non-ionic dispersing groups, and
 - (B) a low-molecular weight aldehyde-reactive cross-linker selected from the group of low-molecular weight polyamines, and low-molecular weight compounds comprising at least one group of one of the formulae $E^1-CHR^1-E^2$ and $H-C-(E^1E^2E^3)$, wherein $-E^1$, $-E^2$ and $-E^3$ are independently chosen from electron-withdrawing groups such as $-P(=O)-O-$, $-CO-$, $-CN$, $-SO_2-$, $-NO_2$ and wherein R^1 has the meaning of hydrogen or a hydrocarbon radical having 1 to 10 carbon atoms.
2. The aqueous-based cross-linkable binder composition according to claim 1, wherein the cross-linker comprises acetoacetate groups.
3. The aqueous-based cross-linkable binder composition according to claim 1, wherein the number average molecular weight of the aldehyde-functional polyurethane is within the range of from 1,000 to 100,000.
4. The aqueous-based cross-linkable binder composition according to claim 1, wherein the polyurethane is obtainable by reaction of:
 - a) an organic polyisocyanate,
 - b) an organic compound containing at least two isocyanate-reactive groups and having a number average molecular weight in the range of 400 to 6,000,
 - c) (a) mono-functional and/or poly-functional isocyanate-reactive compound(s) bearing nonionic and/or ionic dispersing groups (or groups which may subsequently be converted into such dispersing groups),
 - d) an isocyanate-reactive aldehyde-functional compound,

e) optionally, an organic polyol having a weight average molecular weight of less than 400, and

f) optionally, active hydrogen-containing chain extending material.

5 5. The aqueous-based cross-linkable binder composition according to claim 4, wherein the ionic dispersing group is an anionic dispersing group selected from the group of carboxylate, sulphonate and/or phosph(on)ate salt groups.

10 6. The aqueous-based cross-linkable binder composition according to claim 4, wherein the for the nonionic dispersing group use is made of a C₁-C₄ alkoxy poly C₂-C₃ alkylene-oxide group in an amount between 2.5 and 20 wt.%, based on the polyurethane.

15 7. The aqueous-based cross-linkable binder composition according to claim 6, wherein the C₁-C₄ alkoxy poly C₂-C₃ alkylene-oxide group is used in an amount between 5 and 15 wt.%.

20 8. The aqueous-based cross-linkable binder composition according to claim 1, wherein the aldehyde-functional polyurethane to low-molecular weight aldehyde-reactive cross-linker equivalence ratio, based on the aldehyde-reactive groups of the low-molecular weight cross-linker and the aldehyde groups of the polyurethane, is in the range of from 0.5:1 to 5:1.

25 9. The aqueous-based cross-linkable binder composition according to claim 2, wherein the acetoacetate cross-linker is selected from the group of trimethylol propane triacetoacetate and trimethylol ethane triacetoacetate.

30 10. The aqueous-based cross-linkable binder composition according to claim 1, wherein the polyamine cross-linker is selected from the group of α,ω -alkylene diamines having from 2 up to 20 carbon atoms in the alkylene group, cyclohexylene diamines, 2-methyl piperazine, isophorone diamine,

adducts of a (poly)amino compound to a polyfunctional epoxy, isocyanate, maleinate, fumarate or (meth)acryloyl compound, and hydrogenated polynitro or polynitrile compounds.

5 11. The aqueous-based cross-linkable binder composition according to claim 10, wherein the polyamine cross-linker is 3-[2,2-bis-(3-amino-propoxymethyl)-butoxy]-propylamine.

12. A method of using the binder composition according to claim 1 in the
10 production of primer compositions or clear coat compositions.

13. A method of using the binder composition according to claim 1 in the refinishing of cars.